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AUGUST 13, 1949

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

"Hot" Hornet

See Page 98

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MEDICINE

High Blood Pressure Aid

Malarial parasites have proved effective in reducing elevated blood pressure. The malaria can then be cured within a few days with drugs.

➤ DISCOVERY that malarial parasites have the ability to reduce high blood pressure was reported by Dr. Eusebio Y. Garcia of the Medical Research Clinic in Binan, Laguna, Philippines.

He gave four high blood pressure patients injections of the commonest and mildest species of malarial parasites, which resulted in a fall in their high blood pressure, Dr. Garcia told a meeting of the Philippine Society of Parasitology.

It is believed, he said, that about 90% of high blood pressure diseases originate in the kidneys. Some changes in the body cause the blood flow to the kidneys to be reduced, which starts the secretion and storage of renin, an enzyme of protein nature. When this is liberated in the blood stream it reacts with a substance in the blood to elevate the blood pressure.

Malarial parasites appear to have the power to counteract this chain of events by increasing the blood-flow to the kidneys which was previously deficient and so reduce the secretion and storage of renin. Moreover, the parasites destroy a certain amount of red blood cells. This makes the body react in such a way that an inhibitor of the high blood pressure substance is released. Another way the parasites might accomplish reduced high blood pressure is by promoting congestion in the brain.

The malaria is induced by injecting the blood from a malaria-infected patient which is the non-relapsing form. It can be cured within a day and a half to four days by any of the standard drugs to combat this disease.

These results are not final, Dr. Garcia said, until further experiments can show that the effect is permanent.

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NUCLEAR PHYSICS

Hornets As Leak Detectors

See Front Cover

➤ "HOT" hornets—in the radioactive sense, not just with their stingers—promise to be useful in the safety program of the Atomic Energy Commission. The potential helpfulness to man of these energetic but not-too-popular insects is disclosed in the semi-annual report of the AEC.

One curious but until now apparently useless fact of natural history was the knowledge that the common white-faced hornet accumulates the element barium in its body. Barium, a chemical relative of the more familiar and abundant calcium (lime) is widely distributed in nature. It is also one of the lighter elements formed in the radioactive breakdown of the heaviest natural element, uranium, the atom-bomb metal.

Researchers on military and peaceful uses of uranium naturally do not want escaping atomic fragments strewing the countryside with dangerous pollution. So it is proposed to encourage colonies of hornets to live in the neighborhood of nuclear-fission laboratories, and to seek their food among plants exposed to possible radioactive leaks. From time to time some of them will be captured, killed and analyzed. If they assay too high in barium, there's a "hot" leak somewhere, that has to be found and stopped.

On this week's cover of the SCIENCE NEWS LETTER a hornet is shown getting her meal of barium.

Description of various safety measures used in atomic energy laboratories and power plants occupies a substantial part of the AEC report. Because they know how dangerous is the stuff with which they are dealing, scientists and other workers around the laboratories normally take elaborate precautions against exposure, and the number of casualties to date has been gratifyingly small.

One new development, not yet in use, has been the finding of a new, re-usable coolant for the atomic piles, to replace the water- and air-cooling systems hitherto employed. This is expected to simplify the coolant-disposal problem.

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ACCOUNTING

Atom Forces Uncle Sam to Modernize Bookkeeping

➤ INSTEAD of keeping his eye merely on the money coming in and going out of the public treasury, Uncle Sam from now on can tell definitely how much money he will have to save to replace piping for uranium hexafluoride, or what the cost is per millicurie of invisible radiation.

Modern industrial accounting methods are entering Uncle Sam's bookkeeping system for the first time. Atomic energy and fissionable materials have succeeded in disintegrating the Government's antiquated cash basis accounting. They have replaced it with accrual bookkeeping and cost accounting, so far as the major industrial companies contracting with the Atomic Energy Commission are concerned.

The accounting systems of the Commission and its contractors have been so coordinated that the balance sheet of each company can be entered in the super-ledgers of the Atomic Energy Commission.

"Taken together", says the Commission in its Sixth Semi-Annual Report, "the books of account kept by the Commission and its contractors will show the assets, liabilities, net worth, and financial results of operation of the entire atomic energy program.

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CHEMISTRY

Photographic Wash Water Is Reusable by New Treatment

➤ THE same old batch of wash water used in Army field photographic laboratories may be used over and over again by a method of purification developed by the Signal Corps at Fort Monmouth, N. J. The process is particularly of value in advanced and isolated positions where fresh water is unavailable.

In a typical field laboratory approximately 3,000 gallons of fresh water are needed in a 24-hour period. With the new development, a supply of about 10 gallons is sufficient if purified and reused many times. The process is based on a principle of water purification used during the past decade or so known as ion exchange. It is used by industry to soften water fed to large boilers, and was used by the Navy during the war to produce drinking water from the ocean brine.

In the Signal Corps process, the water, after use in washing photographs, is passed over thousands of tiny particles of synthetic resin. These filter out and recapture silver and other impurities acquired by the water in the washing procedure. The water, stored in a tank located in the mobile laboratory, is pumped to a print washer where it removes hypo from the prints, circulates back to the resins, and is then in condition for reuse.

The synthetic resins used are virtually indestructible and can be rejuvenated by the simple process of immersing them in either battery acid or washing soda, depending upon the particular type of resin.

While this Signal Corps process is suitable to purify water for reuse for washing photograph prints, it cannot be used to purify water for drinking purposes because the resins are ineffective in killing bacteria or lower forms of organisms.

Science News Letter, August 13, 1949

AGRICULTURE

Carbon Aids Soil-Heating

The natural gas derivative, carbon black, has been found to help the soil absorb more heat from the sun. This finding may help farmers in their planting.

➤ CARBON black, the powdered material obtained from natural gas and used to toughen automobile tires, has been successfully used at the Massachusetts Agricultural Experiment Station, Amherst, to raise soil temperature, according to a report in INDUSTRIAL AND ENGINEERING CHEMISTRY, publication of the American Chemical Society.

Soil containing the carbon black absorbs more heat from the sun than ordinary soil. In the experimental work, carbon black at the rate of two tons per acre was mixed in the top two-inch layer of a sandy-loam. With an instrument called a potentiometer, surface and near-surface temperatures were recorded every 15 minutes, 24 hours a day, for more than a year.

During the spring and summer months, it was found, maximum daily temperatures reached by the carbon-treated soil surfaces were higher on an average by about two degrees Fahrenheit than maximum temperatures of untreated soil surfaces in adjacent plots of the same type of soil. At a two-inch depth, the carbon-treated soil showed maximum daily temperatures about 3.4 degrees higher than those of the untreated soil.

Further tests are being made both at Amherst and at other agricultural institutions throughout the country. If an economically feasible process can be worked out, farmers may be able to defrost their land for earlier planting in the spring, and at the same time postpone the first fall frost and thus give late crops more time to mature.

The cost is not excessive. Carbon black runs from 3.5 to seven cents a pound. A single treatment should suffice for a number of years even though some loss from erosion may occur. There is no evidence that the carbon black acts as a plant nutrient or is digested by plant roots. Whatever influence it exerts on plant growth is attributed to its effects on soil temperature, as well as on the texture, salt retention and moisture retention of soils.

The experiment of the Massachusetts station was carried out by Prof. John Everson of the University of Massachusetts and James B. Weaver of Godfrey L. Cabot, Inc., Boston, a manufacturer of carbon black.

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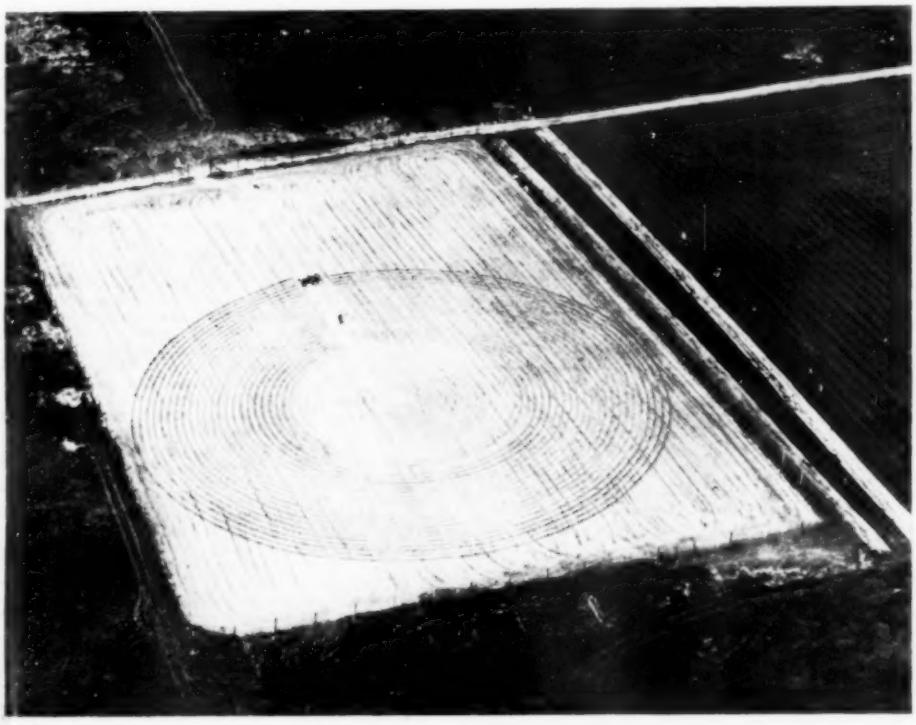

***RADIATION'S EFFECT ON GROWING PLANTS**—Rows of crops are planted at varying distances from a source of radiation in the form of radiocobalt which will be placed on the pole in the center of this experimental area to help scientists determine the effect on plants.*

INVENTION

Concentration Process for Uranium Given AEC

➤ A NEW process for the concentration of uranium out of its ores has just been disclosed via the issuance of U. S. patent 2,477,924 to Sherman M. Fried of Chicago and Norman R. Davidson of Sierra Madre, Calif. They have assigned their patent rights to the government, as represented by the Atomic Energy Commission.

The new process covers just one step in the concentration of uranium oxides, from uranyl uranate (U_3O_8) to uranium trioxide (UO_3). Essentially, it consists in heating the lower oxide in the presence of oxygen under pressure. Extent of conversion and time required vary according to temperatures and pressures employed. Time may be cut to as little as one and one-half or two hours by using pressures of from 60 to 150 atmospheres at a temperature between 700 and 750 degrees Centigrade.

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AERONAUTICS

Pre-Flight Training in High Schools Increased

➤ SOME 100,000 cadets of high school age are to be enrolled in pre-flight training this fall, Civil Air Patrol has revealed. Already 23,000 boys and 7,000 girls have enrolled in the program which is given in secondary schools throughout the nation. The experimental stage has now been passed, and credit toward diplomas is being given the students for their study of air science.

The ultimate aim of this educational program is to create a continuing body of air cadets whose interest in aviation will carry them into the aircraft industry as scientists, executives, mechanical and maintenance experts, and as navigators and pilots. They are receiving instructions in class rooms after school hours, in club quarters of the Civil Air Patrol and at nearby air bases. Classes are held once a week. Instructors are, in general, local volunteer members of the Civil Air Patrol.

The Civil Air Patrol is an official auxiliary of the U. S. Air Forces, and is ready at all times to go into prompt service in emergencies such as search and rescue work. Thousands of hours were flown by CAP pilots last winter during the blizzard in the West that made feeding isolated people and cattle necessary. This is but one of many aviation jobs for which their services may be required. Many of the members of the CAP are reserve pilots in the U. S. Air Force.

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GENERAL SCIENCE

Private Lives Invaded

Leading scientists on AEC committee protest FBI clearance for Atomic Energy Commission fellowship holders as "federal interference with private lives of citizens."

➤ STRONG disapproval of the requirement that all holders of AEC fellowships be cleared by an FBI investigation is expressed by the nine members of the Atomic Energy Commission's general advisory committee headed by Dr. J. Robert Oppenheimer, director of the Institute for Advanced Study. Partial text of the statement follows:

Admittedly, the tensions of the times and the secret nature of the atomic energy work require elaborate checks for all who have access to classified material. But to carry over the same security concepts to holders of fellowships who will in no way have access to secret or confidential information seems to us both unwise and unnecessary.

It is clear that these requirements of FBI investigation of prospective holders of AEC fellowships would be to extend still further the area of federal interference with the private lives of citizens. We use the word "interference" advisedly, for it is evident that the type of questioning of friends, relatives, and acquaintances required by the investigative procedures of the FBI do constitute an encroachment on the private affairs of many people.

To repeat, we grant this to be necessary in these times in those cases where persons are to be employed on secret government matters. But we are horrified by the prospects of moving this whole semi-police apparatus into the realm of youth. We believe that the reputation of many young people of the country might be adversely impaired by rumors growing out of such a system of investigation of prospective fellowship holders.

Older people can see in proper perspective calls from FBI agents, they can answer questions about acquaintances without feeling that the man being investigated is under suspicion. But young people of university age are likely to react quite differently. An atmosphere of suspicion and uncertainty is likely to be generated by the activities of federal agents among many groups of friends in colleges, universities, and in local communities.

In short, the results of requiring investigations of candidates of fellowships will have serious repercussions throughout the country . . .

Against the evil effects which we believe will probably follow the adoption of the proposals for FBI clearance of AEC fellows, let us place the possible gains. Let us admit that without such clearance an occasional clandestine member of the Communist party might receive a fellowship. But even the proponents of the proposals do not contend that security will be thereby endangered, for the holder of the fellowship has no privileges in regard to classified information.

If after completing his studies the fellow wishes to work for the government he will be subjected quite properly to a thorough check which will reveal his affiliations if he is a Communist and he will be rejected. At the worst the government will have then spent its money on a man who can not be used for the furtherance of the national security.

But leaving aside the question of cost to the government, we submit the risk that a very few Communists may receive training though an open and uninvestigated fellowship program represents a negligible loss, as compared to the bad effects on the spirit of our nation which would result from a further extension of counter-espionage methods to those of college age.

Besides Dr. Oppenheimer, the committee consists of: Dr. Oliver E. Buckley, President, Bell Telephone Laboratories; Dr. James B. Conant, President, Harvard University; Dr. Lee A. DuBridge, President, California Institute of Technology; Dr. Enrico Fermi, Professor of Physics, Institute for Nuclear Studies, University of Chicago; Dr. I. I. Rabi, Chairman, Department of Physics, Columbia University; Hartley Rowe, Vice President and Chief Engineer, United Fruit Company; Dr. Glenn T. Seaborg, Professor of Chemistry, University of California; Dr. Cyril S. Smith, Director, Institute for the Study of Metals, University of Chicago.

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NUCLEAR PHYSICS-MEDICINE

Atom Age Hypo Syringes

Lead-enclosed syringes are protecting scientists from harmful radiation to which they are exposed while treating patients.

➤ HYPODERMIC syringes for the atomic age are getting coatings of lucite and even lead.

Exposure to radioactive chemicals day after day can cause serious injury and shorten life. Patients getting the chemicals for treatment do not get the daily, life-long exposures. But X-ray and radium specialists who give the treatments might. And because such chemicals are being used more and more, there is increasing danger to the specialists giving the treatment or using them in the search for better methods of treating disease.

Radiogallium, one of the newer radioactive chemicals under study for its possible use in bone diseases, gives off such strong gamma rays that dense lead shielding of the hypodermic syringe proved necessary to protect the scientist studying it.

Shields of this type, for standard hypodermic syringes from very small ones an inch and a half long to big jobs measuring almost seven inches and holding about an ounce of fluid, have been designed by scientists at the Naval Medical Research Institute at Bethesda, Md. The lead-shielded syringes are a little awkward to handle, since they weigh about four and one-half pounds and are very much larger than the ordinary glass syringes. At the Naval Hospital where they have already been used for injections in patients, doctors avoid the difficulty by first inserting in the vein a hypodermic needle attached to a rubber tube used for giving salt or sugar solution. The needle of the lead-shielded syringe is then inserted into the rubber tubing.

A slot milled in the lead shield lets the doctor see the level of fluid as he draws it up into the syringe and whether there are air bubbles in it. A dark-colored solution of the radioactive chemical makes it easier to see the fluid level, bubbles and so on, and for the same reason the inside surface of the shield is coated either with a phosphor activated by radioactive emanations or with some luminous dial paint.

The lead shielding cuts the amount of rays reaching the doctor to well below the amount considered a safe daily dose.

For radioactive chemicals that emit alpha and beta rays instead of gamma rays, a two-piece shield of the plastic, lucite, gives enough protection to the hands of the doctors. These chemicals include two kinds of carbon, iron, phosphorus, sulfur, copper and strontium.

Details of the shield designs are reported in the journal, SCIENCE (July 1), by Comdr. H. C. Dudley, J. F. Bronson and R. O. Taylor of the National Naval Medical Center. The shields are not yet on the market. Comdr. Dudley and associates have applied for a government patent and will make the design public property so that any manufacturer can make them

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NUCLEAR PHYSICS

AEC Inventories Atoms

➤ INVENTORY problems involving uranium 235, it is suggested by the Sixth Semi-Annual Report of the Atomic Energy Commission, just released, are by no means as simple as those faced by King Midas of the golden touch.

The legendary king, who transformed all his surroundings, including his courtiers and his young daughter, into gold, had only to store his wealth in a vault and keep track of the tonnage on hand.

Present day alchemists have their assay problems infinitely complicated by the fact that they cannot lock up their treasure until they are ready to use it. Their trouble is not in changing one heavy metal into another. That process goes on spontaneously. Their difficulty comes in determining how much of which metal is in any one container at what moment.

Their material is not only in constant state of change, but it is accompanied by radiation in deadly quantities and end-products that are fantastically poisonous. It is often impossible to get close enough to the material to assay it at all.

The Atomic Energy Commission announces in its report completion of the first part of its program to account for stocks of radioactive material in its modernized bookkeeping system. Perpetual inventories of such materials have been established, even though the materials themselves are far from permanent.

If a banker had to keep accounts in a world where gold dollars in his vaults slowly changed into copper pennies, and some of his coins were in liquid and gaseous form, as well as metal, he would understand better the problems of cost accounting among the atoms. The Atomic Energy Commission points out that their accounting system is unique, yet they have succeeded in devising a unified system applicable to all industrial organizations contracting with them on atomic energy research.

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CHEMISTRY-ENTOMOLOGY

Outmoded Phonograph Helps in Testing Insecticides

➤ EVEN though your family may have long ago discarded that old style phonograph, the one which played wax cylinder records, the U. S. Department of Agriculture is putting this out-of-date instrument to good use, in money-saving tests of insecticides.

Replacing the record holder of the phonograph with a screen cage, the Department scientists place a white mouse in the cage, turn the crank several times, and give the mouse a shower bath as it is rolled over and over. The shower is not of water, however, but a sprayed insecticide solution. The entomologists use this device in searching for a chemical which will prove effective in

LEAD-SHIELDED SYRINGE—Comdr. H. C. Dudley of the Naval Medical Research Institute fills a lead-shielded standard hypodermic syringe with a radioactive chemical solution. In front of the lead-guarded container is an ordinary hypodermic syringe of about the same capacity, one-third of an ounce, as that he is filling. The syringe at left on the tray is shielded in lucite. The tube showing inside his glove is an electroscope for detecting the amount of radiation getting to his hands and body.

the control of stable flies and other blood-sucking flies and mosquitoes.

After the shower bath, while still tumbling in the cage, the mouse is blown dry by air. The next day the mouse is caged with 20 stable flies. If as many as four of the flies succeed in attacking the mouse, without being poisoned or driven off, the insecticide is considered worthless, and full scale tests on cattle or other livestock are unnecessary.

Hundreds of chemicals, both new synthetics and modifications of well-known older insecticides, are being tested in this manner to find those that will kill or repel the harmful insects, yet will not harm the animals. Experience has shown that the farmer is amply repaid for the cost of the insecticide in the increased milk production and weight gains of cows which are protected from stable flies and other pests.

The preliminary test of the insecticide on white mice not only demonstrates the effectiveness of the chemical but it is much cheaper to perform, requires a significantly smaller amount of material, and results are obtained more quickly than in full-scale tests. If the tests prove the insecticide to be effective for white mice, full scale investigations of the formulations are made on cattle, horses, and other livestock.

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PSYCHOLOGY

Suggest Way to Survival

➤ A SCIENTIST who is worried that we may destroy ourselves has come up with some rules for effective living—and the survival of man.

Dr. Kenneth E. Appel of the University of Pennsylvania Medical School warned that the crime waves, alcoholism, mental illness and increasing divorce rates may be pointing the way to man's destruction. But there is hope if we learn to live with others.

The scientist discussed the future of man as a guest of Watson Davis, director of Science Service, on Adventures in Science, heard over the Columbia network.

Here are Dr. Appel's rules for effective living:

"Don't aim for happiness alone, or even make it your chief objective. The mature individual does not strive always for happiness. There is a higher contentment and peace of mind that may involve unhappiness, effort and even suffering that can be assimilated by the mature mind. There are stakes, goals, rewards and values in the struggle of life that are higher than individual happiness or comfort.

"Don't shirk work. Do something worthwhile. Pull your load unless you are sick. Many people have been deprived of one of the basic satisfactions of life, because circumstances have prevented them from cultivating the habit of effort and achievement, however humble.

"And do things that need to be done or have to be done by somebody, regardless of your immediate feelings.

"Get along and cooperate with others. Work in an organization. You must learn to work for a time even under unfair and unpleasant authority. Stand for frustration, failure, mistakes, disappointment and always carry on—whether the frustration be of your ambition or in your personal relationship with others.

"Take responsibility. Show independent initiative. Be self-decisive, self-moving, self-directing.

"Absorb frustration and failure without developing handicapping, disintegrating tensions of fear, anger, depression, suspicion, blaming others, withdrawal, or undue bodily disturbances associated with intense emotion.

"And you should show devotion, effort, and love to something beyond yourself. Such are the qualities of emotional, mental or personality health that we all—fathers, mothers, children, society—have to cultivate. And it is possible for all of us continually to improve our capacities in these regards.

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ASTRONOMY

Nebulous Star Groups?

➤ RED LINES discovered in spectrograms made at Mexico's National Astrophysical Observatory at Tonanzintla may help settle an astronomic puzzler.

The red lines, made in the spectrum of faint nebulous objects in the famed Andromeda nebula, indicate the presence of hydrogen. And the hydrogen indicates that the objects may be planetary nebulae or nebulous star groups like the Pleiades, but not globular clusters, as has previously been suggested by some astronomers.

The new spectrograms were made with the wide-eyed Schmidt telescope at Tonanzintla which boasts the largest prism in the world, 26 inches in diameter. Dr. Guillermo Haro, director of the Mexican National Astronomical Observatory at Tacubaya and a member of the research staff at Tonanzintla, made the discovery, which was reported in a communication to Dr. Harlow Shapley, director of the Harvard College Observatory, from Dr. Luis Enrique Erro, director of the Tonanzintla Observatory.

"The new result from Mexico shows definitely that at least some of the objects are not typical globular clusters," Dr. Shapley commented.

Two astronomers, Drs. Edwin P. Hubble and Walter Baade, both of Mount Wilson Observatory, had tentatively speculated that the objects were globular clusters.

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ENGINEERING-CHEMISTRY

Add Nothing to Paints Is Advice of Expert

➤ ADDING a little of this and a little of that to modern household paints may entirely change their characteristics, the amateur painter was warned by E. D. Peck of the Pittsburgh Plate Glass Company.

The numerous superior paints that have been developed since the end of the war are in specialized categories of composition, performance and application, he said. Synthetic resins and specially processed oils now used by practically all paint manufacturers are not always compatible with the old-time ingredients of mix-your-own-paint days.

All paint makers print concise directions for the use of their products on the labels of the containers. These instructions should be carefully followed to give the best results.

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CHEMISTRY

Wood Waste Is Source Of Sugary Chemicals

➤ CHEMICAL wealth is extracted from wood waste in a new way by a process on which U. S. patent 2,465,347 has just been granted to Robert M. Boehm of Laurel, Miss., and Horace E. Hall of Lyle, Tenn. Rights have been assigned to the Masonite Corporation, large user of wood chips in the making of wallboard.

When wood chips are subjected to high steam pressure, as in the preparation of wallboard fiber, the liquid that runs out contains in solution considerable quantities of what are known as sugar precursors—substances from which industrially useful sugars can be prepared by chemical treatment. To separate these from the tars, acids and other undesired substances that are also in solution, a mixture of about four parts of acetone and one part isopropyl ether is added. This converts the sugar precursors into insoluble forms, which come down as precipitates in a relatively high state of purity, leaving the undesired substances still in the watery solution which can be poured or filtered off.

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MEDICINE

Assign Rheumatism Drug

Cortisone distribution to institutions has been put in the hands of a committee of the National Academy of Sciences to speed investigation.

➤ SCARCE supplies of the dramatically effective drug, Cortisone or Compound E, for treating rheumatoid arthritis, will be allotted by a committee of the National Academy of Sciences, under the chairmanship of Dr. Chester S. Keefer of Boston, who during the war also was "czar" of civilian penicillin and streptomycin distribution.

The small amount of the new drug available during the remaining months of this year will be used for clinical and investigational purposes to provide information vitally needed to insure its safe and effective use.

The value of Cortisone in controlling the symptoms of this painfully crippling disease is "regarded as established", the announcement of Dr. A. N. Richards, Academy president, states, but "much remains to be learned concerning its possible untoward effects, its usefulness in other diseases and the mechanism of its action."

For that reason the Research Corporation, which administers the patents on the new drug, turned to the National Academy and pledged itself to accept the recommendations of the Academy committee as final authority in distributing all of this year's supply of Cortisone.

Applications for a supply of Cortisone must be submitted on a form that can be obtained from Dr. Keefer at 2101 Constitution Ave., Washington, D. C., but he will consider only requests from institutions with adequate facilities for investigation and clinical control.

Some of the new drug will be used in diseases other than rheumatism experimentally if the investigators believe that the usefulness of the new treatment can be extended.

The Academy committee, which will use the facilities of the National Research Council for its work, consists of Dr. Keefer as chairman and Dr. Hans T. Clarke of the College of Physicians and Surgeons, New York, Dr. E. A. Doisy, St. Louis University School of Medicine, Dr. Robert F. Loeb, of the College of Physicians and Surgeons, New York, Dr. C. N. H. Long, Yale University School of Medicine, Dr. E. K. Marshall, Jr., of the Johns Hopkins University School of Medicine, and Dr. Joseph T. Wearn of Lakeside Hospital, Cleveland, with Dr. David E. Price of the U. S. Public Health Service as liaison with that governmental agency.

Cortisone, (originally known as Compound E, which name was abandoned because of confusion with vitamin E) is a complex chemical that was originally obtained from the cortex of the adrenal gland. It is now being prepared synthetically from a bile acid. It was isolated by Dr. E. C. Kendall of the Mayo Clinic. Dr. Philip S. Hench of the Mayo Clinic headed the group that pioneered its clinical use just a few months ago. Merck and Co. chemists participated in the biochemical investigations that resulted in its partial synthesis. The full scientific name of Cortisone is 17-hydroxy-11 dehydrocorticosterone.

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PSYCHOLOGY

Infants' Sleeping Habits Charted Under New Grant

➤ WHETHER the sleep of the innocent is untroubled or not is a problem scientists are going to tackle. Infants between six and 26 weeks old will have their sleeping habits charted under a $10,000 grant made for this purpose to the department of physiology at the University of Chicago by Swift and Company.

One phase of the study will cover the diet and its effect on infants' sleeping habits. Researchers intend to add 25% protein in the form of specially prepared meats to the feeding formula of the babies.

The sleeping pattern of these infants will be recorded by a special device attached to the crib.

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MEDICINE

Advice for Next Winter: Avoid Snow on Frostbite

➤ MOP off your brow, pull up a cold drink and listen to the latest medical advice: "Don't rub snow on frostbite."

This untimely (south of the Arctic) warning was published in the YALE JOURNAL OF BIOLOGY AND MEDICINE. If you can remember it next winter, though, it may be mighty important.

The old practice of putting snow or cold water on frostbitten portions of the body may cause gangrene, not prevent it. This has been discovered in experiments conducted by Drs. Robert E. Lempke of Johns Hopkins Hospital and Harris B. Shumacker, Jr., of Indiana University.

The scientists made their findings by freezing the tails of mice. When the frozen tails were rapidly warmed, no gangrene set in, but it did when cold was applied.

Rapid thawing and a solution of tetraethylammonium were found effective in preventing gangrene when used individually or together. Another satisfactory method was to use these with heparin which limits blood clotting.

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CHEMISTRY

New Chemical To Replace Benzedrine in Inhalers

➤ A NEW chemical compound will replace benzedrine in nasal inhalers used to relieve colds, hay fever, and sinusitis, Smith, Kline & French Laboratories, pharmaceutical manufacturers, announced.

The new remedy is called Benzedrex and its discovery is credited to Dr. Glenn E. Ullyot, head chemist for the firm. It has the advantage of being able to shrink the nasal membranes and thus relieve the congestion in the nose. At the same time it does not stimulate the user the way benzedrine does.

The search for this substitute chemical remedy grew from the reports of prisoners who removed the benzedrine-medicated paper from inside the containers to chew them or dunk them in beverages to get a "lift". Recently a bill was submitted to Congress which would have required a physician's prescription to obtain the benzedrine inhaler.

Other forms of benzedrine used by physicians to treat a variety of conditions will be obtainable by prescription, the firm stated.

Science News Letter, August 13, 1949

SUBSTITUTE FOR BENZEDRINE INHALERS—Benzedrex, the new relief for colds, is shown undergoing tests by Dr. Glenn E. Ullyot, its discoverer. Dr. Edwin J. Fellows, who directed the experiments on the new drug, is watching the procedure.

MEDICINE

Disease of Poultry Spreading to Humans

➤ NEWCASTLE disease, a serious poultry sickness, appears to be spreading to human beings, the American Veterinary Medical Association warned. In human cases, the eyes, nervous system and respiratory tract are affected.

The malady, which was first detected in 1926, is now known wherever chickens are raised. Its principal manifestations in poultry are a high death-rate among young chicks and sharp reduction in laying rate among mature fowl. Vaccines are the principal means of combating it.

Science News Letter, August 13, 1949

OPHTHALMOLOGY

New Lens Blurs Vision But Improves Eyesight

➤ A LENS that will rest the good eye while putting the laggard eye to the work of seeing was announced by the American Optical Company, Southbridge, Mass.

Working on the principle that some patients afflicted with cross-eyes use only one eye to see with while letting the other lose from disuse its ability to see, scientists devised a slightly pebbled clear glass. This lens will blur the vision in the working eye and so force the poorer eye to perform the task of seeing.

An advantage credited this lens is that it looks much like an ordinary spectacle lens with the eye visible. Previously, treatment in such cases called for eye patches or opaque lenses which attracted attention to the condition and made people reluctant to wear them.

Science News Letter, August 13, 1949

MEDICINE

Expectant Mothers Warned Of Fungus-Disease Danger

➤ MOTHERS-TO-BE are faced with a new danger to their lives, warn Drs. Leroy E. Smale and J. W. Birsner of Kern General Hospital, Bakersfield, Calif.

Four women who died and a fifth who is expected to die from a tuberculosis-like disease called coccidioidomycosis are reported by the physicians in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Aug. 6).

This disease is caused by a mold or fungus which usually enters the body through the breathing passages and may start as a "cold". It causes tumors to form on the lungs, skin, viscera, bones and sometimes the meninges. Abscesses may form on the skin, and the pus from these will usually reveal the presence of the disease upon examination.

Because the disease resembles tuberculosis which can be transmitted to the offspring by the mother, the physicians tested for this possibility but concluded that as far as can now be determined this fungus-borne condition is not congenital.

The doctors urge that all pregnant women in areas where the disease is prevalent, such as Los Angeles County, have skin tests if they have symptoms in the upper part of the respiratory tract. They recommend the same test for expectant mothers with meningitis.

Science News Letter, August 13, 1949

PHOTOGRAPHY

Faster Shutter and New Indoor Color Film Devised

➤ THE fastest shutter of its type in the world and a new type of indoor, color roll film were announced by the Eastman Kodak Company.

Eastman said the new between-the-lens shutter, which will be incorporated in a new model camera, has an accurate top speed of one eight-hundreth of a second, making it the fastest shutter of this type.

Blades in the shutter pivot and rotate through a partial circle inside the shutter housing, opening and closing the aperture in a single stroke, it was explained.

The new film is similar to other Kodacolor film, but it requires no special filters for taking pictures indoors or outdoors at night with flash or flood bulbs. If used in daylight, however, the new Kodacolor film, type A, should be used with a filter, it was explained.

Science News Letter, August 13, 1949

ASTRONOMY

New Star Spotted in France Was Studied Here

➤ A "new star" or nova, has been discovered in France and studied in Texas by two visiting French astronomers.

The new discovery and its tale of international cooperation among French astronomers was reported by Dr. Harlow Shapley, director of the Harvard College Observatory.

The star was spotted Aug. 1 at Meudon, France, near Paris, by Charles Bertaud. Word of the find went from France to the European clearinghouse for astronomical information at Copenhagen and then to the North American center at Harvard.

With the information sent from Harvard, Dr. Guido Munch at the McDonald Observatory of the Universities of Texas and Chicago at Fort Davis, Texas, confirmed the discovery. Spectrum studies of the star were then made of the star by two visitors to the Texas observatory, Victor Kourganoff and Mlle. Canavaggia, both from France.

The star was found in the constellation of Scutum, the shield.

Science News Letter, August 13, 1949

IN SCIEN

NUCLEAR PHYSICS

New Radiation-Measuring Device May Aid in Research

➤ A NEW device for measuring radioactivity may replace the Geiger counter in certain phases of atomic research.

The instrument, an alpha scintillation counter, has been developed by Dr. Benedict Cassen, Clifton Reed, Leonard Baurmash and Lawrence Curtis of the Atomic Energy Project on the Los Angeles campus of the University of California.

In low rate counting problems encountered in some health physics and dust study applications, Geiger counters have not been entirely satisfactory, according to atomic researchers. Long runs are necessary to obtain statistically adequate numbers of counts in view of the background caused by cosmic radiation. Frequently Geiger counters become insensitive or give erratic groups of counts in this type of research.

The new type of counter eliminates these obstacles, functioning more efficiently on low rate counting problems. Its greatest utility is in measuring very slight amounts of radioactivity in dust, soil samples, and ashes of biological specimens. The basis of operation is the measurement of alpha particle scintillations by photo-multiplier tubes.

The device is about the size of a table model radio and is entirely automatic once the radioactive sample to be measured is inserted and its mechanism started.

Science News Letter, August 13, 1949

MEDICINE

Dry Ice for Acne Found Effective

➤ ACNE pimples can be weeded out and destroyed with little or no scarring of the skin with the use of dry ice, Drs. Carroll S. Wright and E. R. Gross of Philadelphia reported in the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY (June) published by the American Medical Association.

Each pus sac in the skin is lightly touched with dry ice from three to five seconds, the physicians said. Or if there is a cluster of acne pustules close together, a large piece of ice is applied. Since the pimples are usually elevated the ice leaves the skin between them untouched.

The dry ice makes the pimple blister, then dry and shrink. Little or no scarring was noted by the physicians in over 2,000 acne patients treated by them with dry ice.

Science News Letter, August 13, 1949

NE FIELDS

MEDICINE

Female Sex Hormones Rob Patient of Masculinity

➤ FEMALE sex hormones which were absorbed through the skin of a man working with them made him lose his masculinity, two physicians reported in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Aug. 6).

The anti-masculine effect followed the patient's assignment as a chemist to a pharmaceutical firm where he extracted and purified these substances from the urine of pregnant women. It was found that his hands were often in contact with alcoholic solutions containing high concentrations of the hormones, according to Drs. Max A. and Joseph W. Goldzieher of St. Clare's Hospital, New York.

Improvement was noted in the patient after he quit his job and was treated with male sex hormones.

The physicians point to this case as an illustration of the harmful effects that may follow if large amounts of these hormones should by accident be absorbed through the skin. They feel it is important for other doctors to keep this possibility in mind.

Science News Letter, August 13, 1949

PSYCHOLOGY-NUTRITION

If Mother Is Short on B_1 Child May not Learn Fast

➤ IF A nursing mother's diet lacks thiamine (vitamin B_1) her baby may later be subnormal in ability to learn. If, on the other hand, she eats more thiamine than she needs, the baby may turn out brighter than normal.

This is indicated by tests with infant rats which were kept on a synthetic diet with controlled amounts of thiamine. The nursing "mother" received the experimental diet until the babies were weaned at the age of 21 days. Then the babies were continued on the diet until they were eight weeks old. They then were given a normal diet for a week before their learning ability was tested. This allowed the vitamin-deficient animals to gain weight and strength before the learning began.

One group of 18 animals was given a normal diet for the whole period of the experiment. Seven other groups of 18 animals each were given the synthetic diet containing varying amounts of thiamine from a diet markedly deficient to one greatly in excess. For one of these latter groups the diet was further enriched with the other B vitamins.

The experiment was conducted by Dr. Philip H. O'Neill, of Fordham University, who reports results in the JOURNAL OF GENETIC PSYCHOLOGY. A daily allowance of less than three millionths of a gram of thiamine diminished maze learning ability below normal, he found. More than one hundred millionths of a gram a day improved maze performance above normal.

But variations in the thiamine content of the diet between three millionths of a gram and one hundred millionths of a gram did not make much difference in the ability to learn.

When the baby rats received an excess of thiamine, adding large amounts of the other B vitamins to the diet did not improve learning.

Science News Letter, August 13, 1949

METEOROLOGY

Frozen Raindrops Have Unfrozen Centers

➤ FROZEN raindrops (no, don't look for them now; next Christmas, maybe!) are hollow spheres of ice, with hearts of liquid water that never freezes, no matter how cold they get.

A physical explanation for this meteorological paradox is offered by a Japanese scientist, Dr. Kotaro Honda. Freezing takes place from the outside inward, he points out. Ice expands as it forms, so that the unfrozen interior of the drop is placed under ever-increasing pressure.

Dr. Honda's calculations indicate that at minus 33 degrees Centigrade (27.4 degrees below zero Fahrenheit) this internal pressure is on the order of 50,000 pounds per square inch.

The same internal-pressure effect keeps part of the water liquid within ice-coated trees, Dr. Honda states. Harmful drying out in extreme freezing weather is thereby prevented.

Dr. Honda summarizes his calculations in a letter to the editor of the British science journal, NATURE (July 30).

Science News Letter, August 13, 1949

CHEMISTRY

Meatier Chickens Foreseen With Synthetic Feed

➤ CHICKENS need more of one amino acid (a building-block in meat-making) than comes naturally in their vegetable feeds, so they will henceforth receive it from a man-controlled source.

DL-methionine, the lacking but necessary amino acid, will be produced synthetically in quantity by the Dow Chemical Company, it is announced in CHEMICAL AND ENGINEERING NEWS (Aug. 1). This is expected to mean meatier chickens produced in less time and at lower cost to the farmer.

Science News Letter, August 13, 1949

ZOOLOGY

Red Howler Monkey Found To Be Very Conservative

➤ A RED HOWLER is neither a party-liner nor a red-baiter. He's a tough old conservative . . . monkey.

This non-political finding about the attitude, and abilities, of the South American monkey was reported to the Smithsonian Institution in Washington by Dr. Philip Hershkovitz, who made field studies of the red howler in the jungles of northern Colombia.

Dr. Hershkovitz's description of the monkey sounds like a left wing view of the political conservative. The scientist found the red howler "a comparatively sedentary animal, sluggish in movement, conservative in habits."

The conservative monkey, he explains, is a die-hard who sticks close to his home and old ways. The red howler will starve rather than adapt to new conditions.

This conservatism may be a good thing for human neighbors of the jungles where the monkey lives. The Smithsonian scientist said that the red howler continues to live— or starve—on its usual jungle foods, even when civilization pushes the jungle back. Less conservative near-monkey-relatives of the red howler will loot cultivated fields.

Science News Letter, August 13, 1949

ORNITHOLOGY

Terns Losing Ground to Gulls at Park Rookery

➤ A GREAT struggle for existence is going on among the birds at Molly Island, bird rookery in the south end of Yellowstone Lake.

On these two small barren islands, near the southern tip of Yellowstone Lake, some 5,000 white pelicans, cormorants, California gulls, and Caspian terns nest annually. Of this total number of birds observed only 30 terns were counted and they were battling for their life.

The adult Caspian terns were cooperating to save the lives of their young. The young terns were huddled together and the parent birds made a complete circle around them, facing outwards, to watch and drive off the California gulls who were charging frequently and fiercely. When the gulls would approach too closely to this circle, the terns would fly up and savagely attack the gulls. Battles in mid-air ensued.

The outnumbered terns were apparently fighting a losing battle.

Tourists are not permitted to visit Molly Island because of the nesting birds. Once a year the park's chief naturalist and some of his staff visit the islands to check on the birds. On this year's visit 307 birds were banded for the U. S. Fish and Wildlife Service.

Science News Letter, August 13, 1949

AGRICULTURE

Climatic Doubles Are Charted

By careful comparison of crop regions of the world suitable homes may be found for more productive emigrant crops to replace low-yield natives.

By DR. FRANK THONE

➤ HAVE you ever met your double? Doubtless you have had the slightly awkward experience of being warmly greeted by a stranger, who calls you by a name you have never heard and asks you about a family you don't have in a town you have never seen. After you have convinced the cordial stranger that you are you and not somebody else, but no offense taken, he may still insist, "But you sure do look like him, anyway!"

Being a double sometimes proves profitable, if your unknown counterpart happens to be a movie star in need of a stand-in. If he happens to be a political dictator afraid of being shot at, the resemblance may be less of a matter for self-congratulation.

Places as well as persons have doubles, scientists tell us. Somewhere on this globe the locality you live in is so closely duplicated in essential climatic features that you could settle down there and hardly notice the difference—except that the neighbors might be Chinese or Zulus instead of familiar American faces. But you'd see corn or cotton or wheat in the fields, and somehow the sight would make you feel at home.

Immigrants' Adjustments

In a rule-of-thumb sort of way, this has long been recognized in immigrants' adjustments to new lands. Early German comers were fond of the Rhine-like banks of the Ohio ("Vass you effer in Tsintsinnati?"); Scandinavians have tended to concentrate in Wisconsin, Minnesota and the Dakotas; Ukrainians found Canada's prairie provinces inviting; colonizing Spaniards and later-arriving Italians saw their homeland hills replicated in California.

More exact identification of geographic doubles is needed, however, in the exacting business of finding suitable homes for emigrant crops. The world is hungry now, and at the rate its population is increasing it will get even hungrier unless every acre is made to produce its maximum of food. To do this, it may be necessary in many places to replace low-yield natives with more productive strangers. It is no time for tradition or sentiment.

However, neither is it time for hit-or-miss experimentation. It was luck that an obscure tuber from the cool lands of Chile succeeded so well in northern Europe that it is now known as the "Irish" potato. Luck, too, that tobacco from the New World found congenial conditions in Turkey and Egypt. We hear of such successes, but not of failures: how American corn was found unsuitable in Germany, or European grapes for the Atlantic seaboard of this country.

To insure the highest possible success score on first tries, and to reduce the number of costly false starts, the logical thing would seem to be a careful comparison of crop regions the world over, to find where else its climatic and other conditions are duplicated. Then we can do a better job of distributing such seed stocks as we have for rehabilitation purposes. Also, we can take a good look at what our neighbors' land does well with, and know where to send the seed we swap for—whether a new soybean variety should go to Illinois or Georgia, or whether something choice in celery should be tried out first in Michigan or Florida.

Identifying "Doubles"

Here is where the American Institute of Crop Ecology comes into the picture. It is a relatively new organization, small as yet, headed up by Dr. M. Y. Nuttonson, formerly a senior agronomist in the Office of Foreign Agricultural Relations in the U. S. Department of Agriculture. The Institute has undertaken the ambitious program of examining all available data on the world's climates, identifying "doubles" in terms of crop-raising possibilities and spotting them in on the map.

Dr. Nuttonson knows that the task will not be an easy one. There are still vast blank spaces on the climatological maps, where observers have been all too few. However, even in lands that might seem at first glance most unpromising there are sometimes surprising numbers of forward-looking officials and scholars, as well as helpful missionaries, traders and other foreigners. Colonial and former colonial areas are better sources of information, and of course countries with long histories and stable cultures are the richest mines of data.

In working out the climatic picture for any given locality such sweepingly general figures as average annual rainfall, mean temperatures for summer and winter, and direction and average velocity of prevailing winds will not do. Too many deadly extremes can be deceptively hidden in these flattened-out averages. There must be breakdown into smaller units—monthly highs and lows as well as averages.

Length of growing season is important; it is determined as a rule by the number of days between the latest killing frost in spring and the first freeze in autumn. Number of hours of daily sunshine enters into the formula; longer days in such places as Alaska and Norway may offset to a considerable extent the lower temperatures. The number of seasons for which complete records have been kept is of importance, too: the longer the record the more dependable it is likely to be in getting at averages, and the more likely it is to show really critical extremes.

After Dr. Nuttonson has compiled all available figures for as many observation points as possible for a given region or country, he marks in on its map, in parentheses, the names of the American states with climates most nearly resembling those of its provinces or other divisions. These pairings he calls "climatic analogues."

Climatic Analogues

Perhaps the most interesting job of this kind he has done so far is the climatic-analogue map of China. Territorially, Greater China is considerably larger than the United States; its extent is about the same from east to west, but greater from north to south. Hence some of its climatic analogues must be expressed in terms of Canada rather than of the United States.

Thus, on his map the notation (Manitoba) appears across the northernmost part of Manchuria, with (Saskatchewan) somewhat to the southeast of it. Southern Man-

WEST GOES EAST—Tobacco, a plant of American origin, growing on a plain a dozen miles east of Rome, is being picked by an elderly Italian woman.

NORTH GOES SOUTH—Wheat, a crop that originated in the Northern Hemisphere (probably somewhere in the Near East), is being harvested by a husky Maori native in New Zealand.

churia bears the notations (South Dakota) and (Nebraska). Korea is likened to Minnesota and the great Chinese peninsular province of Shantung is equated partly with Kansas, partly with Wisconsin.

At the other extreme, such southern Chinese provinces as Kunnan, Kwangsi and Kwangtung, which are usually frost-free the year round, all bear the notation (Florida). The name of Texas appears in a number of places on the map.

It is even possible, in many instances, to find climatic "doubles" in this country for individual cities in China. Thus, the American city with a climate most nearly like that of Peiping is Salina, Kans.; Dr. Nuttonson adds the remark that Salina is "slightly warmer." The climatic analogue of Canton is Cedar Keys, on the Gulf coast of Florida; that of Nanking is Pawhuska, Okla. Harbin, in Manchuria, has a climate most like that of Winnipeg; remote Urga, in Mongolia, has its "double" in the northwestern Canadian city of Prince Albert.

These climatic analogies between China and North America do not surprise scientists. Agronomists recall how quickly China adopted such New World crops as corn, potatoes, peanuts and tobacco, and how we in turn have received such good gifts from China as soybeans, rice, citrus fruits and tung trees. Botanists have long pointed out the curious fact that prominent in the Chinese flora are trees like the chestnut and shrubs like rhododendron, which we are apt to think of as peculiarly American. The value of Dr. Nuttonson's studies lies in the closer pin-pointing of these hitherto generalized facts, with consequent possibilities of earlier and more profitable applications to practical problems.

Science News Letter, August 13, 1949

INVENTION

Calves Feed Themselves From Nipple-Equipped Pail

➤ "BABY-SITTER" for bossy-cow is a newly designed milk pail with a plastic nipple near the bottom, for use by the calf separated from its mother. It is a product of General Electric, far removed from the giant electric generators and 50,000,000-volt atom-smashing betatrons which the same company builds.

Hung on a fence, it enables new-born calves to take their milk under conditions similar to natural feeding, so that they can be separated from their mothers two days after birth. A check-valve, made of molded plastic, compels calves to drink in small sips and keeps them from gulping large quantities of air.

This new calf-feeding device has a name of its own. It is a "calf-teria" and it is to be marketed by the Calf-teria Company of Fort Wayne, Ind.

Science News Letter, August 13, 1949

ENGINEERING

Fertilizer Material Mined Faster with New Equipment

➤ EIGHT tons of potash ore for fertilizer is now dumped each minute from a new mine hoist in Carlsbad, N. Mex., which carries the ore automatically to the surface from 1,150 feet below ground.

Two ore buckets, or "skips", each with an eight-ton capacity, operate in the vertical shaft, alternately being loaded and hoisting the ore to the surface. The new "push-button" drive and control equipment, driven by a pair of 500-horsepower motors, was developed by the General Electric Company.

Science News Letter, August 13, 1949

ENGINEERING

French Coal—to—Gas Trial

➤ FRENCH experimental work in converting coal to gas, without removal of the mineral from the underground seams in which it occurs in nature, is to be reviewed at the meeting this month of the United Nations Scientific Conference on the Conservation and Utilization of Resources at Lake Success, N. Y., by Prof. Doumenc of the St. Etienne, France, School of Mining.

This international organization is known as UNSCCUR for short, and during its coming meeting, which begins Aug. 17, some 500 scientific papers will be presented by outstanding scientists and engineers from 70 countries in all parts of the world.

The gasification of underground coal has been undertaken in past years in several parts of the world, notably in Russia and the United States. Satisfactory and economical commercial processes have not yet been developed although experimental work gives every promise for the early future. Gases obtained can be used for firing boilers or converted into synthetic liquid fuels such as gasoline and heating oil.

The French work is being carried out in the Djerada anthracite field in Morocco. This anthracite contains only five percent of volatile matter and the problem is largely to convert the coal into carbon monoxide. Exceptionally favorable conditions exist for the experiment in the site selected because of the outcropping panel, the almost vertical dip of the seam, and the absence of flooding. On the other hand the composition of the coal and the thinness of the seams mean that the scheme will have to be planned with great care.

At the same meeting an American experiment in gasifying coal in place under ground will be discussed by M. H. Fies, of the Alabama Power Company, and James L. Elder of the U. S. Bureau of Mines. The undertaking is a joint project, near Gorgas, Ala., of these two organizations and is now in its second year.

The first year's work was successful. A better quality gas is expected this year from the experience gained. Other objectives of the second experiment are to determine the quantity of coal that can be gasified from a given initial combustion zone and the shape and the extent of the burned-out areas formed during the gasification. Also it is designed to test various types of installations and to determine their operational characteristics under variations of conditions.

Science News Letter, August 13, 1949

Words in Science—
ASTEROID-COMET

➤ AN asteroid is one of many thousands of tiny planets which move around the sun, principally in the region between the orbits of the planets Mars and Jupiter. Although they look like stars, they differ from them in that they shine only by reflected light. They are believed to have been born of the disruption of a small planet that wandered too close to a larger one.

Although some asteroids move in orbits like those of the short-period comets, comets are very different in nature. Comets are not solid bodies, but great clouds of gas, surrounding small clusters of particles. Astronomers do not know how, when or where comets were formed. A bright comet appears as a fuzzy spot in the sky with a tail stretching out like a plume of smoke, always away from the sun.

Science News Letter, August 13, 1949

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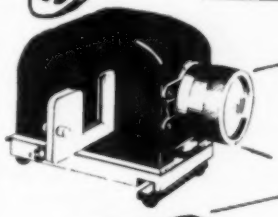

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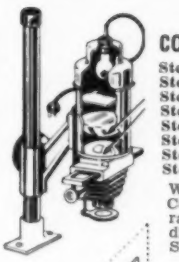

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FORESTRY

NATURE RAMBLINGS

by Frank Thone

Don't Raise Hell!

➤ HELL, to rangers in the U. S. Forest Service and the National Park Service is not a remote theological concept; it is a near and terrible physical reality. They don't merely believe in it; they know it. Many of them have been there; any of them may be called upon in regular line of duty to go there at any time, especially in late summer. For a forest fire, with its horrors of agonizing death to all forms of wildlife and its aftermath of charred ruin, surpasses even the grimmest of Dante's nightmares.

Every summer vacationer, camping, hiking or fishing in the national forests and national parks, carries in his pocket a bunch of keys to this hell. Unless he is a criminal or a lunatic he will not use them deliberately; he is much more likely to loose the furies of flame through sheer inadvertence, through plain forgetfulness of where he is and with what perils he is surrounded.

Most of the millions of people who annually make recreational use of our national forests and parks are city folk. Typically, when an urbanite lights a cigarette or a pipe outdoors, he simply tosses the match away, never bothering to see whether it is out or not and taking no note of where it falls. Similarly, when his cigarette is finished he tosses the butt aside, still smoldering. That may not be so bad in town: concrete sidewalks and asphalt pavements are not combustible. But that kind of thoughtlessness may mean the start of a million acres of devastation and thousands of animal lives lost—not to mention the possibility of human tragedies as well.

Danger of man-caused fires becomes especially great during August and early September, which are dry weeks in most of our forested areas, and at the same time are the period of heaviest tourist traffic. It therefore behooves everyone making use of such recreation areas to give careful thought to his stewardship, never relaxing his personal fire-watch for a moment.

Rules are simple enough. Don't throw away a match until you can pinch the blackened end between your fingers and feel no heat at all. Don't merely pinch out your cigarette butt or grind it under foot; slit it up one side and rub the crumbs between your hands, again until everything is quite cold. And never leave a campfire until you have drowned the last ember in gallons of water.

Science News Letter, August 13, 1949

ENGINEERING

Patented House Has Drains for Hot, Dead Air

➤ IS YOUR house hot, these days?

Maybe dead air, trapped in attics and under-eaves spaces, is to blame. It is on this theory that Robert Stevenson of Lynbrook, N. Y., has developed a house design that provides drainage ducts and vents within the wall spaces, to circulate air into these neglected glory-holes and equalize the temperature throughout the structure. U. S. patent 2,477,152 has been issued to him on this idea.

Science News Letter, August 13, 1949

● RADIO

Saturday, August 20, 3:15 p. m., EDST

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Chester S. Keefer, of Boston, chairman of the committee of the National Academy of Sciences on the Investigation of Cortisone, will discuss "Progress in Arthritic Therapy."

• Books of the Week •

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W. Washington 6, D. C. Ask for free publications direct from issuing organizations.

APPLIED TEXTILES: Raw Materials to Finished Fabrics—George E. Linton and Joseph J. Pizzuto—*Lifetime Editions,* 4th ed., 385 p., illus., $6.00. A two year course of study for department store training schools, technical schools with textile courses, dressmakers and others. Illustrations are helpful in learning the different types of materials.

ATOMS IN ACTION—George Russell Harrison—*Morrow,* 3rd ed. 406 p., $5.00. A non-technical book on the applications of modern physics.

CHEMISTRY OF SPECIFIC, SELECTIVE AND SENSITIVE REACTIONS—Fritz Feigl—*Academic,* 740 p., illus., $13.50. A book for chemists which attempts to discover the regularities and rules that govern specificity, selectivity, and sensitivity by examining the details of analytical procedures. Of Brazilian origin. Translated by Ralph E. Oesper.

COME TO THE FARM—Ruth M. Tensen—*Reilly & Lee,* 35 p., illus., $2.00. Written at the primer level, this book follows *Come to the Zoo* which was at pre-primer level. For every boy and girl to learn about the farm animals, with its brief text illustrated by many beautiful photographs.

CONTRIBUTIONS TO EMBRYOLOGY, Vol. XXXIII, Nos. 213 to 221—*Carnegie Institution of Washington,* 186 p., illus., paper, $8.50 ($9.25 in cloth). Studies of Rhesus monkey and human embryos.

COURTSHIP AND MARRIAGE: A Study in Social Relationships—Francis E. Merrill—*Sloane,* 360 p., $3.75. An educational aid to the study of courtship intended as a source of insight into the adventure for those about to embark on it.

DICTIONARY OF OCCUPATIONAL TITLES, Vol. I: Definitions of Titles—Division of Occupational Analysis—*Gov't Printing Office,* 2nd ed., 1518 p., $3.50. Contains 22,028 definitions of jobs in the American economy, arranged alphabetically according to job title.

DICTIONARY OF OCCUPATIONAL TITLES, Vol. II: Occupational Classification—Division of Occupational Analysis—*Gov't Printing Office,* 2nd ed., 743 p., $2.00. Shows the relationship between jobs in the various industries and classifies them by code number. Includes a glossary of technical terms used in describing jobs.

A FACSIMILE OF A REPORT ON THE ROCK OIL, OR PETROLEUM, FROM VENANGO COUNTY, PENNSYLVANIA—Benjamin Silliman, Jr., in 1855—*Paul H. Giddens,* 20 p., illus., paper, $1.25. A reprint of a chemical classic that touched off the petroleum industry. Reprinted for the 90th anniversary of the founding of the industry.

FUNDAMENTALS OF BACTERIOLOGY—Martin Frobisher, Jr.—*Saunders,* 4th ed., 936 p., illus., $5.50. A beginning text revised to include the latest material. For students who have some knowledge of chemistry, physics, and biology.

HUMAN ASPECTS OF ENGINEERING—Theodore F. Hatch—*Industrial Hygiene Foundation,* 3 p., paper, free upon request to Industrial Hygiene Foundation, 4400 Fifth Avenue, Pittsburgh 13, Pa. An article on the social effectiveness and responsibilities of the engineer.

LAYOUT: The Practical Application of the Principles of Design to Advertising and Printing—*Charles J. Felten,* 2d ed., 156 p., illus., $6.00. Techniques for planning, designing and production of all types of printed matter for both the small printer and the art director.

NEW WORLD OF CHEMISTRY—Bernard Jaffe—*Silver Burdett,* 710 p., illus., $3.40. A high school text.

NUCLEAR FISSION AND ATOMIC ENERGY—W. E. Stephens, Ed.—*Science Press,* 294 p., illus., $5.00. The result of a series of seminars on nuclear fission held in the Physics Department of the University of Pennsylvania in the fall of 1945, this book is a review of the known facts published in the literature.

ORGANIC CHEMISTRY: A Brief Course—R. Q. Brewster—*Prentice-Hall,* 409 p., illus., $6.00. A college text for a one-semester course.

PROCEEDINGS OF THE FIRST ANNUAL NORTHERN CALIFORNIA RESEARCH CONFERENCE—*Stanford Research Institute,* 68 p., illus., $2.00. Sponsored jointly by The San Francisco Chamber of Commerce, University of California, Stanford University and the Stanford Research Institute, this conference was for better understanding between business and research. Complete texts of speeches, round tables, and discussions.

PROGRESS IN NEUROLOGY AND PSYCHIATRY: An Annual Review, Vol. IV—E. A. Spiegel, Ed. *Grune & Stratton,* 592 p., $10.00. Leaders in the field write on the foremost advances during the past year.

SCIENCE TEACHING: In Rural and Small Town Schools—Glenn O. Blough and Paul E. Blackwood—*Gov't Printing Office,* 55 p., illus., paper, 20 cents. All school children are full of questions about science. This Office of Education booklet offers practical suggestions to teachers. Contains a list of instruction materials.

STUDIES IN THE ANTHROPOLOGY OF BOUGAINVILLE, SOLOMON ISLANDS, Vol. XXIX—Douglas L. Oliver—*Peabody Museum,* 97 p., illus., paper, $5.85. Four papers completed in manuscript in 1941 telling of the findings of the Peabody expedition to Bougainville, in 1938-39.

ULTRASONICS — Benson Carlin — *McGraw-Hill,* 270 p., illus., $5.00. Slanted toward the practical rather than the purely theoretical, this book correlates much of the scattered data.

THE WHOLE LIFE CYCLE OF CHROMOSOMES AND THEIR COILING SYSTEMS, Vol. 39, Part I—L. R. Cleveland—*American Philosophical Society,* 100 p., illus., paper, $1.50. A monograph for the advanced student.

WHY INDUSTRY MOVES SOUTH—Glenn E. McLaughlin and Stefan Robock—*National Planning Association,* 148 p., $3.00.

WRITING FOR LOVE OR MONEY—Norman Cousins—*Longmans, Green,* 278 p., $3.50. Thirty-five essays reprinted from the *Saturday Review of Literature.* Well-known writers tell about writing for those who are preparing for a writing career.

Science News Letter, August 13, 1949

Wood treated with a modern preservative containing pentachlorophenol looks and smells like the untreated wood but is slightly heavier.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 470. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

⚙ *TWO-SPEED lawnmower resembles somewhat familiar mowers pushed by hand but has a gear arrangement by means of which the rotating cutting blades may be driven at a low or at a high speed. In this recently patented device, the cutting blades do not rotate about the main axle as in most mowers, but are positioned behind.*

Science News Letter, August 13, 1949

⚙ *KITCHEN AID for housewives, a British invention, can be used for polishing shoes, scouring pans, peeling potatoes, grinding meat and coffee, beating eggs and other jobs, it is claimed. It is an electric device, on a table-high stand, equipped with various detachable tools for the various jobs.*

Science News Letter, August 13, 1949

⚙ *EGGS are pasteurized and sterilized without breaking the shell, and without cooking, by means of a high-frequency electrostatic field in a recently patented device. Condenser plates, adjustable and made to place over the ends of egg, assure uniform heating throughout the contents of the shell, and there is no appreciable coagulation.*

Science News Letter, August 13, 1949

⚙ *FISHING TOY for youngsters, shown in the picture, includes two fish poles with small magnets on the ends of the lines and six tropically colored plastic fishes with metallic noses so that they are attracted to the magnet on the line. It is designed for either outdoor or bathtub use.*

Science News Letter, August 13, 1949

⚙ *MODEL "B" POWER supply unit, radically new in design, includes new heavy-type selenium rectifiers with wide range variable voltage control, damped volt and ammeter, eight power tap adjustments and heavy-duty switch. It is designed for testing or operating automobile radio receivers, but has many other applications.*

Science News Letter, August 13, 1949

⚙ *PEPPER GRINDER, an improved type for use on the dining table together with a companion barrel-shaped, metal-topped and bottomed glass salt shaker, provides a superior taste to the food on which used because of the retained aroma and the flavorful oils of the pepper berry. A few berries are placed in the tiny mill at each filling.*

Science News Letter, August 13, 1949

⚙ *SOLDERING IRON is heated chemically without use of an electric current, blow torch or furnace. A cartridge inserted in it contains a chemical mixture of certain magnesium-type powders capable of generating intense heat. Ignition is caused by the impact of a spring rod, pulled out and released at the back of the handle.*

Science News Letter, August 13, 1949

• Do You Know? •

Women in Norway are still awaiting *nylon stockings*, a Norway paper states.

The reason that white ash is the favorite wood for *baseball bats* is its high degree of shock resistance.

A few *tree species* may be planted direct from the seedling bed to the field, but most trees have a better chance of survival if they are transplanted to a nursery row for a year or two.

A wild weed of Central America, a variety of Desmodium commonly known as *beggarweed*, is now found to have a protein content of about 19%, and is equal to or better than alfalfa when chopped and added to poultry rations.

Under the skins of apples, pears, peaches or plums sprayed with DDT and parathion, none of the *insecticide* was found in laboratory tests; neither was it found in cider from apples having a small surface deposit of the insecticide.

Interior wood, in most climates and under normal conditions, never decays because the fungi that consume wood require more moisture than is apt to be found in the interior of buildings.

A *rocket* can travel where air is thin or non-existent because it carries an oxidizer to enable the fuel to burn; all other types of engines depend on surrounding air for oxygen.

Chile, the Pacific coastal country of South America whose length is 25 times its width, has a climate varying from semi-tropical in the north, through temperate zone conditions in its center to Antarctic cold in the south.

The *Great Plains* area now has some 25,000 miles of shelterbelts and farmstead windbreaks, planted mostly in the past 15 years; these rows of five to ten trees, with the taller ones near the center, conserve moisture and save crops from scorching winds.

Tissue treated with *silicone* is an effective cleaner of eyeglasses.

The first official *meteorological records* in America were started in 1814 when the Army Surgeon General ordered Army hospitals to record the weather.